

QUERY  
 RESULTS

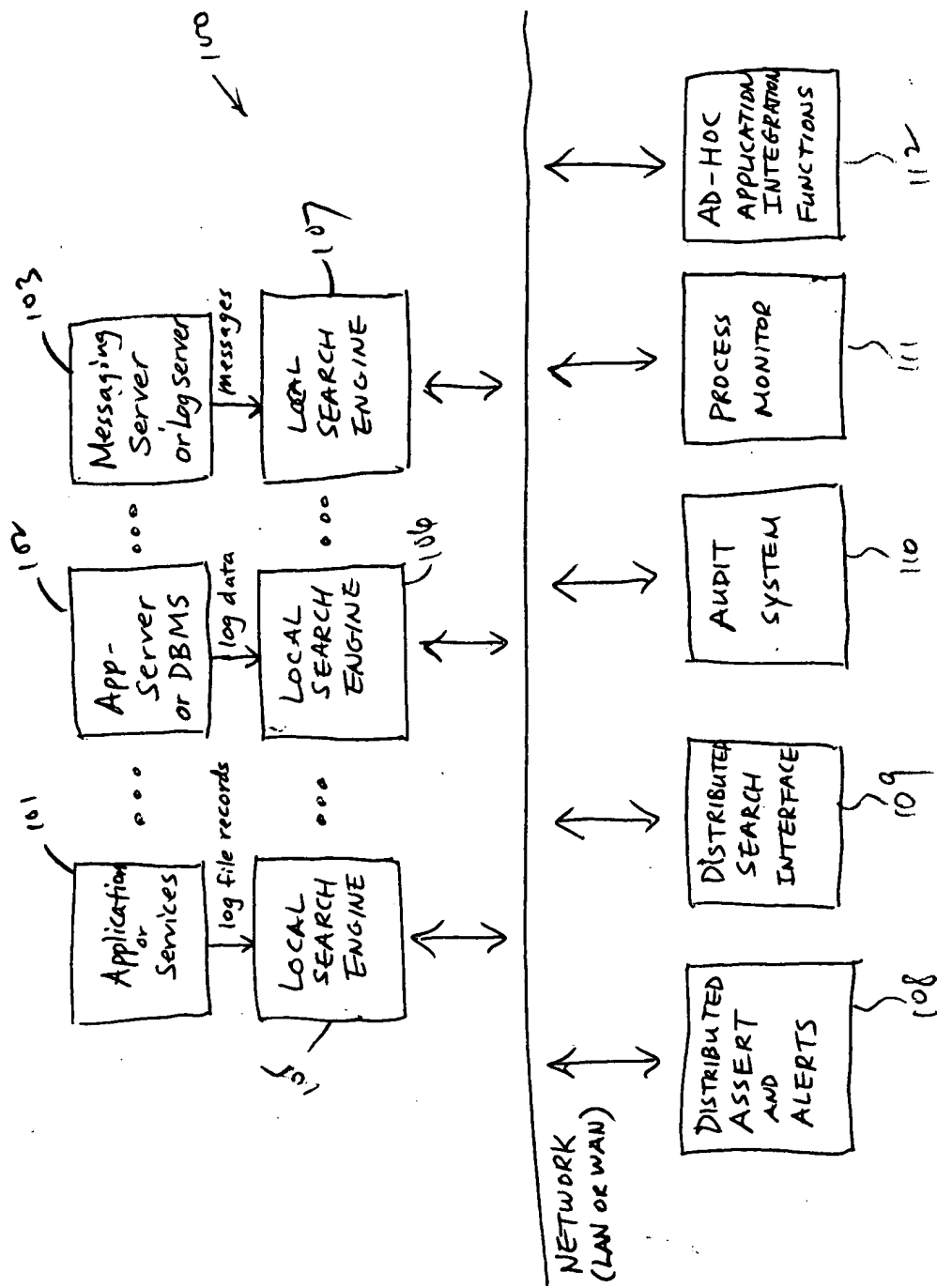


FIGURE 1

# In-memory Index Format

## On-disk Index Format

Hashed by key

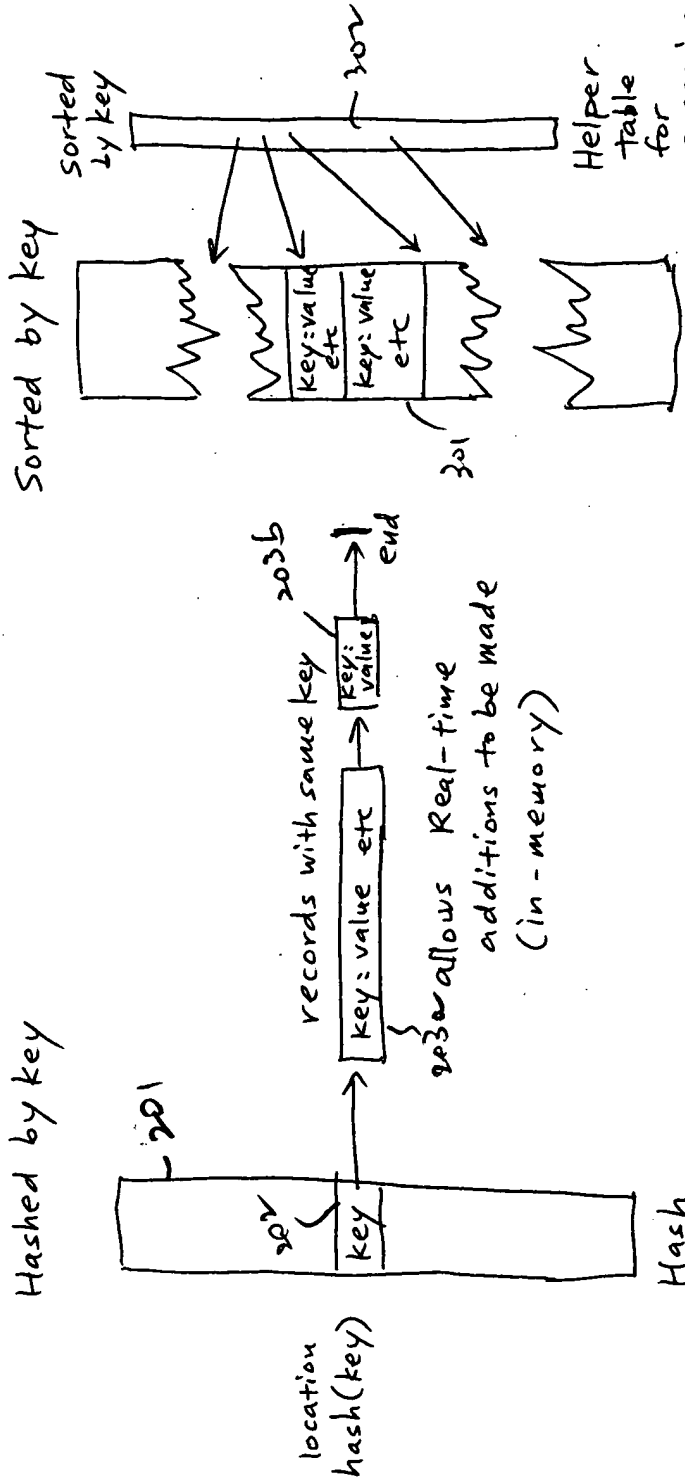


FIGURE 2

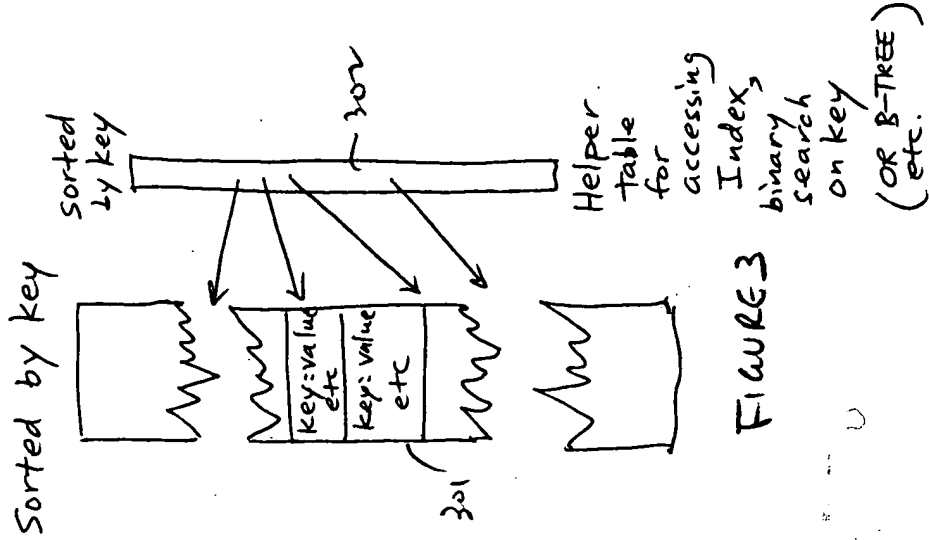


FIGURE 3

SAMPLE LOG DATA TO BE INDEXED

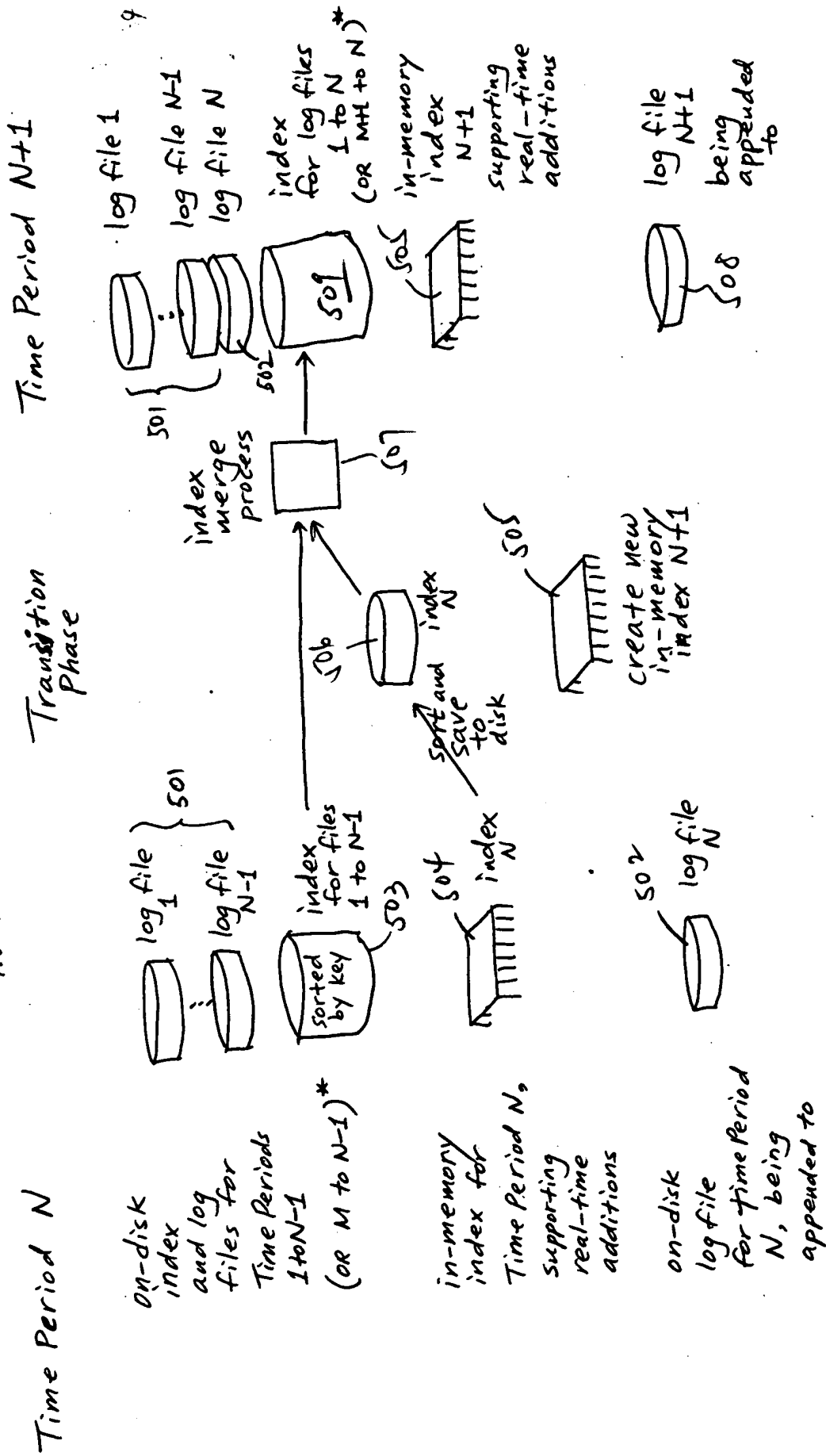
Log Entry ID : —  
Time Stamp : —  
Duration of computation : —  
Module : —  
Key Partial Results : —  
Inputs : —  
Outputs : —  
Transaction ID : —  
Customer ID : —  
Keywords : —  
Version : —  
Side Effects : —  
Server ID : —  
Configuration : —  
System Stats : —  
Manager ID : —  
Transaction Info : —

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FIGURE 4

# LOCAL SEARCH ENGINE

## CONTINUOUS REAL-TIME INDEXING



BEST AVAILABLE COPY

FIGURE 5

# DISTRIBUTED SEARCH INTERFACE

QUERY: Customer ID = X } 601  
timestamp  $\leq T_0$   
timestamp  $\geq T_1$  } 602

ASSERT: IF TransactionInfo/Paid THEN TransactionInfo/Delivered

RESULTS:

TransactionInfo	Customer ID	TimeStamp	Server	Module	LogEntryID
PAID	X	$T_1 \leq T \leq T_0$	host1	app1	13579
Delivered	X	.	host2	app2	24680
CREDIT CARD CHARGED	X	.	.	.	.
WAREHOUSE	X	.	.	.	.
UPS GROUND SENT	X	.	.	.	.
.	X	.	.	.	.
.	X	.	.	.	.

Automated Distributed Assert: if condition fail, alert operator/manager ID: 604

ANOTHER EXAMPLE QUERY: ZIP = 95070, Timestamp = T, } 605  
TransactionInfo/Price  $\geq$  \$100  
TransactionInfo / Call Center Report = URGENT-Missing

ANOTHER EXAMPLE: (Module=App1, Inputs=Y, KeyPartialResults/VariableName=Z) AND } 606  
(Module=App2, Inputs=W, KeyPartialResults/VariableName!=Z)

FIGURE 6